**mapping ancient structures and demonstrating archaeological geophysics at huacas de moche, peru**

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Researchers at the Colorado School of Mines (MINES), the Universidad Nacional de Trujillo (UNT) and the Denver Museum of Nature & Science (DMNS) are collaborating in a multi-phase project to explore the application of geophysics in aiding archaeological investigations and economic site development at Huacas de Moche near Trujillo, Peru.

Huacas de Moche is the largest archaeological site pertaining to the Moche culture (ca. 200-850 CE) of the north coast of Peru. The site consists of two massive monumental structures, locally known as *huacas*, that likelyserved administrative, religious, and ceremonial purposes. Between the two *huacas* existed a sprawling urban center containing numerous canals, dwellings, workshops and unique platform structures. At its height, the site extended 250 acres. Multiple phases of occupation in the urban center from the Moche period through the later Chimu period (ca. 1000-1470) resulted in various superimposed walls, features, and floors, many of which can be mapped using various geophysical techniques. Since 1991, the Huacas de Moche Archaeological Project has been extensively studying the site, which continues to yield important information on the archaeology of the region.

 Geophysics is a non-intrusive, non-destructive, and effective way to map subsurface archaeological features such as the mud-brick structures at the Huacas de Moche. Phase I of the seed project conducted in the summer of 2022, effectively demonstrated the potential for magnetics, frequency-domain electromagnetics, and ground penetrating radar (GPR) to aid in archaeological feature detection at the site. Magnetic maps, electromagnetic maps, and GPR depth slices reveal subsurface walls, floors, and burials throughout feature-rich survey areas. Detected features correlate laterally with a drone-generated digital terrain model where extremely subtle topographic changes suggest avenues and structure corners. Opportunely, recent excavations in an area surveyed with these geophysical methods enabled examination of their contribution. The processed results and interpretations are directly seen and verified from such excavations.

Following the success and lessons learned from the seed project, Phase II expands the geophysical investigations at the Huacas de Moche in detail and extent. In this presentation, we describe the survey areas and designs with considerations to the complex site history. We then discuss the initial interpretations of the data as well as geophysical anomalies that align with the recent excavation discoveries. Phase II will also be outlined to highlight challenges and improvements from the Phase I archaeological geophysical investigation.